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10/019,882	04/15/2002	Yan Yonghong	42390.P8351	8063

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EXAMINER

WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
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2626

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/019,882

Applicant(s)

YONGHONG, YAN

Examiner

James S. Wozniak

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-13, 15-20, 22-28 and 30 is/are rejected.
- 7) ☒ Claim(s) 6, 14, 21 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In response to the office action from 4/4/2006, the applicant has submitted an amendment, filed 8/2/2006, amending claims 1, 4-9, and 11-30, while arguing to traverse the art rejection based on the limitation regarding identifying and marking incorrectly recognized utterances (*Amendment, Pages 8-9*). The applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

2. Due to the amendment of claims 4, 12, 19, and 27, the examiner has withdrawn the previous objection directed towards minor informalities.

Response to Arguments

3. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claims 1, 8, 16, and 23**, the applicant argues that Goronzy et al (*U.S. Patent: 6,799,162*) fails to teach identifying errors in recognized utterances (*Amendment, Pages 8-9*). In response, the examiner notes that Goronzy teaches a step for identifying speech recognition errors utilizing a confidence measure (Col. 3, Line 47- Col. 4, Line 37). Goronzy

relies on this confidence score for labeling an utterance as being probabilistically incorrect (*Col. 3, Line 63- Col. 4, Line 23*). The incorrect utterances then receive a lower graded weighting factor for performing speaker model adaptation (*Col. 4, Lines 24-37*). Thus, since Goronzy discloses a confidence measure that identifies probabilistically incorrect recognized utterances, marks incorrect portions with a confidence score that can be assigned on an utterance, word, or phoneme basis (*Col. 4, Lines 50-56*), and grades an incorrect utterance with a strength of adaptation weight for performing speaker model adaptation, Goronzy anticipates the invention recited in claim 1.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e., requirement of a supervising user for model adaptation, Amendment, Page 9*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In regards to the applicant's arguments directed towards claim 4, with respect to the Goronzy reference (*Amendment, Page 10*), see the above response to arguments. With respect to the applicant's arguments that Junqua (*U.S. Patent: 6,253,181*) fails to teach an average likelihood difference per frame or averaging the average likelihood difference over error words (*Amendment, Page 10*), the examiner notes that Junqua teaches a means for calculating a total likelihood (*average*) per incorrectly recognized (*error, i.e. difference*) utterance (frame) and averaging all of the error likelihoods in determining a confidence measure (*Col. 5, Lines 15-67*). Also, as noted above, Goronzy utilizes calculated confidence measures, on an utterance, word, or

phoneme basis, in determining a weighting factor for model adaptation. The examiner further points out that motivation for combining the prior art of record has been provided in the previous office action (*Page 6*). Also, the applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out *how the language of the claims patentably distinguishes them from the references*.

The dependent claims are argued as further limiting rejected independent claims (*Amendment, Page 11*), and thus, also remain rejected.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-3, 7-11, and 15** are rejected under 35 U.S.C. 102(e) as being anticipated by Goronzy et al (*U.S. Patent: 6,799,162*).

With respect to **Claim 1**, Goronzy discloses:

Calculating estimated weights for identified errors in recognition of utterances (*speech recognition reliability score calculation, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67*);

Marking sections of the utterances as being misrecognized and associating the corresponding estimated weights with these sections of the utterances (*low confidence score speech signal sections that are assigned a corresponding adaptation strength weight, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67*); and

Using the weighted sections of the utterances to convert a speaker independent model to a speaker dependent model (*model adaptation performed at an adaptation module that utilizes adaptation strength weights, Col. 7, Lines 63-67; and Col. 3, Line 48- Col. 4, Line 37*).

With respect to **Claim 2**, Goronzy recites that model adaptation can be repeatedly performed (*Col. 3, Lines 43-47*).

With respect to **Claim 3**, Goronzy discloses:

The utterances are converted into a recognized phone string a first time through applying the speaker independent model (initial adaptation of a speaker independent model, Col. 7, Lines 7-25; and phoneme recognition, Col. 4, Lines 50-56); and

Thereafter through applying the most recently obtained speaker dependent model (*further adaptation of speaker adapted models, Col. 6, Lines 4-15*).

With respect to **Claim 7**, Goronzy discloses that different misrecognized words may have a different weight (*strength of an adaptation weight based on a confidence score, Col. 4, Lines 24-37*).

With respect to **Claim 8**, Goronzy recites:

Recognizing utterances through converting the utterances into a recognized phone string (*recognition of a user utterance, Col. 3, Lines 48-62; and phoneme recognition, Col. 4, Lines 50-56*);

Comparing the recognized phone string with a reference phone string (confidence score calculation process, Col. 3, Line 48- Col. 4, Line 23);

Calculating estimated weights for identified errors in recognition of utterances (*speech recognition reliability score calculation, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67*);

Marking sections of the utterances as being misrecognized and associating the corresponding estimated weights with these sections of the utterances (*low confidence score speech signal sections that are assigned a corresponding adaptation strength weight, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67*); and

Using the weighted sections of the utterances to convert a speaker independent model to a speaker dependent model (*model adaptation performed at an adaptation module that utilizes adaptation strength weights, Col. 7, Lines 63-67; and Col. 3, Line 48- Col. 4, Line 37*).

With respect to **Claim 9**, Goronzy teaches the use of a speaker independent model in speech recognition (*speaker independent model, Col. 7, Lines 7-25*).

With respect to **Claim 10**, Goronzy discloses:

Steps b-e are repeated until differences between the reference and recognized strings are less than a threshold (*adaptation performed until a confidence score is below a threshold, Col. 3, Lines 48-62*).

Claim 11 contains subject matter similar to Claim 3, and thus is rejected for the same reasons.

Claim 15 contains subject matter similar to Claim 7, and thus is rejected for the same reasons.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 4-5, 12-13, 16-20, 22-28 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Goronzy et al in view of Junqua (*U.S. Patent: 6,253,181*).

With respect to **Claims 4 and 12**, Goronzy teaches the speaker adaptation system utilizes weighted adaptation according to a recognition reliability score, as applied to claims 1 and 8. Goronzy does not teach that the weights are calculated through computing an average likelihood difference per frame and then computing a weight value by averaging the average likelihood difference over all the error words, however Junqua discloses a calculation of a likelihood difference used in determining a speaker adaptation that utilizes an average of likelihood scores associated with an incorrect recognition (*Col. 4, Lines 9-24; and Col. 5, Lines 15-67*).

Goronzy and Junqua are analogous art because they are from a similar field of endeavor in speaker adaptation systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Goronzy with the likelihood difference calculation taught by Junqua in order to implement a high speed speaker adaptation system that is capable of providing a measure of recognition reliability (*Junqua, Col. 3, Lines 29-31; and Col.4, Lines 9-24*).

With respect to **Claims 5 and 13**, Junqua further discloses an equation similar to that recited in claim 5 for determining a log-likelihood difference in a speaker adaptation process that utilizes an average of likelihood scores (*Col. 5, Lines 15-67; and Col. 4, Lines 9-24*).

With respect to **Claims 16 and 23**, Goronzy teaches the speaker adaptation system utilizes weighted adaptation according to a recognition reliability score, as applied to claims 1 and 8. Goronzy does not specifically suggest method implementation as a program stored on a memory medium, however Junqua discloses a speaker adaptation method implemented using a processor and associated memory that provides a practical speaker adaptation process in a hardware system (*Col. 7, Lines 10-14*).

Claims 17-20 and 22 contain subject matter similar to claims 2-5 and 7, and thus, are rejected for the same reasons.

Claims 24-28 and 30 contain subject matter similar to claims 9-13 and 15, and thus, are rejected for the same reasons.

Allowable Subject Matter

8. **Claims 6, 14, 21, and 29** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

With respect to **Claims 6, 14, 21, and 29**, the prior art of record fails to explicitly teach or fairly suggest a method for speaker adaptation that utilizes estimated weights based on

misrecognized speech utterances, wherein the estimated weights are calculated by multiplying an average likelihood difference per frame calculated using the equation recited in claims 5, 13, 20, and 28 by the inverse of a number of misrecognized words for a particular speaker as per the equation recited in claims 6, 14, 21, and 29.

Although Junqua (*U.S. Patent: 6,253,181*) teaches an equation for calculating an average likelihood difference, Junqua does not teach multiplying the calculated average likelihood by the inverse of a number of misrecognized words for a particular speaker as per the equation recited in claims 6, 14, 21, and 29.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:


Nguyen et al (*U.S. Patent: 6,272,462*)- teaches a method for identifying incorrectly recognized speech and applying negative weighting factors to such speech to push incorrect models away from correct models in creating adapted speaker models for a new speaker.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
10/11/2006


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